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Convergence and stability analysis of kolmogorov system solutions in infinite-dimensional space

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Abstract

© Medwell Journals, 2017. The study studied the issues of convergence and stability of some calculation system solutions for linear differential equations, namely Kolmogorov's calculation systems in infinite-dimensional space on the basis of local integrability, non-negative coefficients and diagonal dominance properties. The conditions for operators were found with which they solve some problems of these system solution convergence and stability. On the basis of the local integrability, non-negative coefficients and diagonal dominance properties the sufficient conditions were obtained which guarantee the stability and the convergence of Kolmogorov's countable system solutions. The results of the study may be applied during the analysis of technical system various models, particularly the telecommunication system models. Besides, the results of Kolmogorov's system analysis can be used for biological system modeling. The study develops the approach to the qualitative research of Kolmogorov's systems based on the distribution of differential equation qualitative theory in infinite-dimensional spaces on Kolmogorov's systems that allowed to obtain a number of new results. Strict substantiations of the statements are presented concerning the qualitative behavior of solutions for some calculation systems of linear differential equations. One may formulate similar statements for infinite reproduction and death systems which are the particular cases of Kolmogorov's systems as the results of obtained statements.

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Keywords

Convergence, Infinite-dimensional systems of differential equations, Kolmogorov's systems, Logarithmic norm, Stability

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